

**REMARKS**

The Examiner's careful review and examination of the subject application are noted and appreciated.

**Claim Rejections – Nonstatutory Double Patenting**

The Examiner has rejected claims 33, 37-46 and 48-49, based on nonobvious-type double patenting over claims 1, 3, 7, 9, 11, 15, 17, 21, 22, and 23 of U.S. Patent No. 6,830,725.

However, claim 33 requires a maximum concentration difference of less than 0.25 wt. % absorbed hydrogen. Applicants respectfully submit that a material having a maximum concentration difference of less than .25 weight % absorbed hydrogen is nonobvious over the material described by in U.S. Patent Number 6,830,725 ("the '725 patent").

In the present description, Applicants describe testing the maximum concentration difference of material B12 (see page 9, paragraph 87) B12 has the same composition as material described in the '725 patent (see column 6, line 5). B12 has an MCD of greater than .33 (see table at paragraph 127), which is higher than the MCD required by Applicant's claim 1. Thus, a hydrogen storage element having a MCD of less than .33 is not taught by the '725 patent.

The PTO has failed to demonstrate that the '725 reference teaches each and every limitation of Applicants' claim 33 and all claims dependant thereon. In fact, Applicants demonstrate in their specification that every element of Applicants' claim 33 and all claims dependant thereon is **not** taught in U.S. Patent Number 6,830,725.

Therefore, removal of the obviousness-type double patenting rejection is respectfully requested.

**Rejection of claims 1-7, 12-23, and 28-30 under 35 USC 102(b) over United States Patent 4,487,817 (Willems)**

Willems does not anticipate Applicants' claim 1, because Applicants' claim 1 is directed to hydrogen storage alloy having a specific amount of cobalt (up to 9%). In contrast, Willems does not expressly or inherently disclose Applicants claimed Cobalt level.

Willems teaches a compound having a  $\text{CaCu}_5$  structure having a general formula  $\text{AB}_m\text{C}_n$  where A consists of Mischmetal or at least one of Y, Ti, Hf, Zr, Ca, Th, La, and the remaining rare earth metals, B consists of two or more elements from the group formed by Ni, Co, Cu, Fe, and Mn, and C consists of at least one element selected from the group consisting of Al, Cr, and Si. Willems further states  $m+n$  is between 4.8 and 5.4, and  $n$  is between .05 and .6 (col. 2, l. 39-65).

However, Willems does not teach a composition having Applicants' claimed cobalt level, that is, cobalt being present in an amount of less than 9 atom %. Instead, Willems teaches that cobalt may or may not be present in the alloy (column 2, lines 57-58), and further teaches in a suitable embodiment that cobalt is be present in an atomic ratio of 1.5-3.5 (correlating to 25 atom % to 58 atom %).

As discussed in Applicants' specification, cobalt is utilized to increase cycle life of hydrogen storage alloys. However, cobalt inclusion increases the cost of the hydrogen

storage alloy (see page 3, paragraph 24.) Applicants provide a hydrogen storage alloy having high cycle life and low levels of cobalt.

Since Willems does not expressly or inherently disclose Applicants' claimed Cobalt level, Willems does not disclose each and every claim limitation of Applicants' claimed composition. Thus, Willems does not anticipate Applicants' claimed invention. Therefore, removal of the anticipation rejection is respectfully requested.

**Rejection of claims 1-2, 11-23, and 28-31 under 35 USC 102(b) over United States Patent 5,512,135 (Komori)**

Komori does not anticipate Applicants' claim 1, because Applicants' claim 1 is directed to materials having a maximum concentration difference of less than .25 weight % absorbed hydrogen, a property that is not inherent in the materials taught by Komori.

The Examiner relies on Komori to teach a "hydrogen storage alloy having CaCu<sub>5</sub> crystal structure and having composition represented by the formula MmNixMy where Mm is a mischmetal or mixture of rare earth, M is at least one of Al, Mn, Co, Cu, Fe, Cr, Zr, Ti, and V and X+y is greater than or equal to 5.0 and less than or equal to 5.5... the alloy comprises Ni, Al, Mn, Cu, and Co; where Co is less than 9 at.%."

Applicants respectfully submit that the property of having a maximum concentration difference of less than .25 weight % absorbed hydrogen is not inherent in the material described by Komori. Applicants describe a material B12 that meets the attributes cited by the Examiner as being described in Komori. Specifically, B12 has 16.7 atom % misch metal (comprising La, Ce, Pr, and Nd), 64.5 atom % Ni, 5 atom % Co, 4.6 atom % Mn, and 6 atom % Al. (See page 9, paragraph 87.) This material falls

within the composition ranges described in Komori. However, B12 has an MCD of greater than .33, (See table at paragraph 127).

Thus, Applicants demonstrate in their specification that claimed material is not inherently described in the teachings of Komori. Therefore, removal of the rejection of claims 1-2, 11-23, and 28-31 under 35 USC 102(b) over Komori is respectfully requested.

**Rejection 8-11, 24-27-, 31-32 under 35 USC 103(a) as being unpatentable over (Willems)**

*Claims 8-11*

As mentioned above, Willems does not teach a composition having Applicants' claimed cobalt level, that is, cobalt being present in an amount of less than 9 atom %. Instead, Willems teaches that cobalt may or may not be present in the alloy (column 2, lines 57-58), and further teaches in a suitable embodiment that cobalt may be present in an atomic ratio of 1.5-3.5 (correlating to 25 atom % to 58 atom %).

As discussed in Applicants' specification, cobalt is utilized to increase cycle life of hydrogen storage alloys. However, cobalt inclusion increases the cost of the hydrogen storage alloy (see page 3, paragraph 24.) Applicants provide a hydrogen storage alloy having high cycle life and low levels of cobalt.

Since Willems does not teach Applicants' claimed Cobalt level, Willems does not disclose each and every claim limitation of Applicants' claimed composition. Thus, Applicants' claims 8-11 invention are nonobvious over Willems.

*Claims 24-27, 31-32*

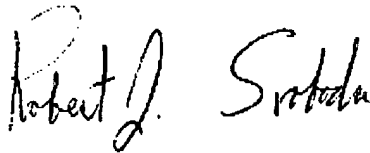
As mentioned above, Willems does not teach a composition having Applicants' claimed cobalt level, that is, cobalt being present in an amount of less than 9 atom %. Instead, Willems teaches that cobalt may or may not be present in the alloy (column 2, lines 57-58), and further teaches in a suitable embodiment that cobalt is be present in an atomic ratio of 1.5-3.5 (correlating to 25 atom % to 58 atom %).

As discussed in Applicants' specification, cobalt is utilized to increase cycle life of hydrogen storage alloys. However, cobalt inclusion increases the cost of the hydrogen storage alloy (see page 3, paragraph 24.) Applicants provide a hydrogen storage alloy having high cycle life and low levels of cobalt.

Since Willems does not teach Applicants' claimed cobalt level, Willems does not disclose each and every claim limitation of Applicants' claimed composition, Thus, Applicants' claims 24-27, and 31-32 invention is nonobvious over Willems.

Applicants respectfully request withdrawal of all outstanding rejections and respectfully submit that the application stands in condition for allowance. If the Examiner has any questions or suggestions regarding this amendment, the Examiner is respectfully asked to contact Applicants' representative at the telephone number or email address listed below.

Respectfully submitted,



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